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The DEIS must include full characterization of the fuel and the degree of variability of the fuel, and of the fate and transport of the waste under thermal treatment conditions.

The process of thermal treatment of these potentially chemically complex and variable waste streams, and of pretreatment of the resulting gas, could result in release of certain VOCs and creation of products of the treatment. The possibility of malfunctions exists, and the nature and composition of the products of partial or incomplete combustion of the RDF/coal mixture must be understood, and the fate characterized and assessed by the EIS.

Solid waste incineration releases metals, acid gases, and products of incomplete combustion. At least 217 different organic compounds have been identified in MSW incinerator emissions. Emissions during upset conditions can release compounds of concern at levels orders of magnitude higher than steady state products of thermal treatment of the wastes. The possibility of emissions of compounds of particular concern that are present in the coal and may be present also in the waste, such as mercury, and which may be created through thermal treatment of chlorinated compounds, such as dioxins and furans, must be thoroughly assessed. Monitoring and emissions data from comparable facilities burning such waste, and/or trial burn results, should be developed to determine the possibility for such emissions from this thermal treatment process during steady-state or upset conditions.

The other notable area in which the DEIS failed to adequately assess impacts was in the waste streams generated by the facility. While the applicant hopes to market the "frit," the DEIS must assume that the material will be land-disposed, and the short- and long-term impacts of the management, storage, transportation and disposal of between 500 and 1000 tons per day of the material must be assessed. Additionally, the costs of disposal of the material and the impact of these costs on project viability should be evaluated.

Partitioning, fate and transport of the metals in the waste are of concern. A Columbia University research report for the US WEPA Office of Research and development, July 15, 1983 entitled "Destruction of Toxic Organic Substances in a Slagging Gasifier Including Determination of Heavy Metals in the Slag," authored by Distefano, et al., indicated that, rather than the expected concentration of metals and ungasified components in the slag,

A preponderant fraction of the metal and metal oxides introduced with the 1:2 coal/RDF pellets was carried over with the gaseous products; part was plated out on the upper, cooler portion of the refractory gasifier lining; part was trapped out with the condensed coal tars; and a negligible fraction was present in the fritted vitreous, silico-alumina slag."

Comment No. 8 (cont.)**Issue Code: 12**

chromium, cobalt, manganese, nickel, and vanadium are immobilized almost entirely in the vitrified frit.

7/16
(cont.)

Comment No. 9**Issue Code: 06**

Comment noted. All solid or liquid fossil fuels generate a vast array of organic compound emissions when combusted or subject to thermal decomposition processes. The total quantity of such compounds would be relatively low from the proposed project, as indicated by the emission estimates presented in Chapter 5, Table 5.7-1, of the EIS. These emissions are far less than those that would be produced by direct combustion of coal or RDF pellets. Table 5.7-2 summarizes emission estimates for hazardous air pollutants. The emission rate estimates presented in Tables 5.7-1 and 5.7-2 are based in part on data from similar facilities. The air quality permit allows emission limits to be exceeded during process malfunctions for no more than 2 hours.

9/06

Additional discussion of acid and metal deposition issues has been added to Section 5.7.4 for the Final EIS.

Comment No. 10**Issue Code: 12**

Frit from other gasifiers operating on different feed stocks pass the more stringent Universal Treatment Systems criteria of the EPA-TCLP analytical method and are nonhazardous. The frit from this facility is also expected to pass the Universal Treatment Systems criteria. If it is not marketable, KPE would dispose of the frit at an industrial solid waste landfill in the State of Kentucky and bear all associated costs. KPE cannot assess waste treatment costs until the plant is designed. KPE would not know what "specific" waste disposal requirements, if any, may exist until the plant is designed, or waste disposal requirements are identified or specified by regulatory determinations. General waste disposal requirements would not be known until day-to-day plant operations begin.

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The partitioning, fate and transport of the metals, and the characterization, management and disposal of lining materials and the effect of land disposal of those materials must be included as direct effects of the gasification process.⁹ The DEIS makes no mention of this waste stream, and should evaluate from a systemic standpoint the concentration of constituents of concern in the waste feed and the fate of those constituents in the process, rather than limiting consideration to the "frit."

One metal of particular public health concern is mercury, yet it is given scant consideration. High mercury capture is available at relatively low cost from coal gasification facilities using activated carbon before syngas is burned, and should be required.

The characterization of the "frit" must include assessment of the available literature regarding short and long-term potential for mobilization of constituents of concern from the material. Among the questions to be addressed are the extent to which leaching would occur under a range of beneficial reuse or disposal conditions; including monofill or mixed-waste disposal. The applicant has indicated that the waste passes the TCLP test, but that test measures short-term leaching potential under conditions of mixed waste disposal (low pH). If the waste is land-disposed, it will likely be disposed in a monofill, and possibly under higher pH conditions. Additionally, short-term leaching tests may not fully reflect leaching potential, and longer term leaching tests under a range of pH values, should be reviewed. The variability of combustion conditions and of waste feed metals and chlorine content and the effect, if any, that these variables have on the leaching potential of the resulting frit must also be assessed.

CONCLUSION

The Council respectfully requests that these considerations, and the comments submitted by Will Herrick, the Kentucky Environmental Foundation, Sierra Club Cumberland Chapter and others be carefully evaluated, and that additional assessment of the full range of alternatives and effects, be undertaken in advance of a final decision on federal cost-sharing for the proposed project.

Cordially,

Tom FitzGerald
Director

⁹ With four planned refractory lined reactors each with an internal diameter of 12 feet, the change out and disposal of linings must be addressed but from a waste management standpoint and from a financial standpoint, since the cost of land disposal if the problems identified in the Columbia study have applicability here, may affect the project economics and project viability.

Comment No. 11**Issue Code: 11**

10/12
(cont.)

Most of the mercury in the gasification process would be immobilized in the frit. Chapter 3 of the EIS has been revised to discuss metal partitioning in the gasifiers.

11/11

10/12
(cont.)

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ATTACHMENTS

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Kentucky Resources Council, Inc.

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December 13, 2001

Rob Daniell
Division of Waste Management : By fax & e-mail only
14 Reilly Road
Frankfort, Kentucky 40601

Re: Global Energy, Inc.
Request for Determination Regarding Applicability
Of KRS 224.40.

Dear Director:

After a review of the position paper submitted by Global Energy to the state Division for Waste Management, and after review of the applicable statute and case law, I believe that the facility is subject to the solid waste regulations and is required to obtain a determination of consistency from the solid waste management governing body of Clark County before importing and disposing of the solid waste fuel through thermal treatment.

By letter dated October 9, 2000, Global Energy Inc., Suite 2000, 312 Walnut Street, Cincinnati, OH 45202, through its manager of Regulatory Affairs Dwight Lockwood, requested a determination from the Kentucky Division of Waste Management as to the applicability of KRS 224.40 to the proposed "integrated gasification combined cycle (IGCC) power plant project in Clark County."

The request letter from Global Energy (Hereafter Global) asserted that the proposed project was "exempt from waste regulations." The 2-paged letter contained an attached "Analysis of the Non-Applicability of KRS 224.40 to the Kentucky Pioneer Energy IGCC Project."

The determination of applicability of the waste regulations rests in the first instance with the Natural Resources and Environmental Protection Cabinet, subject always to review by the courts. KRS Chapter 224 is a statute that is remedial in nature and its protections are to be liberally with a view towards promoting the public and environmental protection goals of the statute. *Roland v.*

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Kentucky Retirement Systems, Ky.App.52 S.W.3d 579 (2001). Exemptions from its reach are to be narrowly construed.

The question of whether the proposed coal and waste-fueled facility is subject to the requirements of KRS Chapter 224 as a waste management and waste disposal facility is of significance to the residents of Trapp and of Clark County, since if exempted from the ambit of the term "municipal solid waste facility," the planned importation of processed municipal solid waste from northeastern states representing the equivalent of "roughly half of the residential waste generated in the entire Commonwealth of Kentucky" will not be subject to scrutiny and a determination by the local governing body of Clark County of the consistency with that county's approved solid waste plan.

When enacted in 1991, Senate Bill 2 substantially revised state and local solid waste management, requiring of local communities that they plan for the proper management of solid waste generated within their borders and promising, in return, that the local "governing body" responsible for solid waste planning would have the ability to control the manner and extent to which waste generated outside of the boundary of that planning unit would be managed and disposed of within the planning area.

The proposal to thermally treat and to combust the volatile fraction of one million tons or more per year⁹ of treated municipal solid waste falls squarely within the type of facility intended by the General Assembly to be scrutinized under the solid waste planning process.

KRS 224.40-315 mandates that:

No permit to construct or expand a municipal solid waste disposal facility shall be accepted for processing by the Cabinet unless the application contains a determination from the governing body for the solid waste management area in which the facility is or will be located concerning the consistency of the application with the area solid waste Management plan [.]

The scope of this statute and the requirement for a determination of consistency with the approved solid waste plan is defined by the term "municipal solid waste disposal facility", which is defined in KRS 224.01-010(15) to include:

Any type of waste site or facility where the final deposition of any amount of municipal solid waste occurs, whether or not mixed with or including other waste allowed under

⁹ The Public Service Commission filing by East Kentucky Power Cooperative in response to requests for information indicated a 50-50% fuel to waste feed mix at 1 million tons of each per year, while noting that the actual feed ratio may vary.

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subtitle D of the Federal Resource Conservation and Recovery Act of 1976, as amended, and includes, but is not limited to, incinerators and waste-to-energy facilities that burn municipal solid waste. . . .

The term is broadly inclusive of all types of waste sites or facilities where the final deposition of any amount of municipal solid waste occurs. There can be no serious argument that the feed material to be combined with the coal is a solid waste, which is to say, that the material is "garbage, refuse, sludge and other discarded material." The waste is to be processed, according to the applicant, at a facility in a state other than Kentucky, where it will be manufactured from municipal solid waste by removing "large objects and white goods" as well as "glass and metal [.]". The remaining material, including chlorinated plastics, will be milled and shredded.¹⁰

These "pellets" are municipal solid waste processed as an intermediate step in the thermal treatment of the waste to produce a gas for combustion. The proposed facility is utilizing a fuel stream comprised of partially separated, shredded and shaped municipal solid waste used as a fuel source, disposing of the waste through thermal treatment at high temperature to drive off the volatile fraction for combustion. As such, it is engaged in disposal of a municipal solid waste stream and falls within the ambit of a "municipal solid waste disposal facility" the siting and operation of which should be reviewed for consistency with local solid waste plans.

The applicant claims exemption for the waste fuel from the waste program as a "recovered material," yet the clearly better reading of the statute, and the intent to carefully regulate the disposal of solid waste by thermal treatment as well as other means, militates against the exemption of the material from regulation as a solid waste. The material is not a "refuse-derived fuel" notwithstanding the claim by the applicant to the contrary, since the applicant has indicated that it intends to retain the recoverable plastics in the waste¹¹ (likely for the Btu value), and thus is outside of the ambit of "recovered material," since that definition specifically excludes "materials diverted or removed for purposes of energy recovery or combustion []" from being considered recovered material.

Assuming, for the sake of argument, that the waste were further processed over what is proposed, in order to meet the state definition of "refuse derived fuel" by removing all recoverable plastics and other recoverable material, such as mixed paper, corrugated paper and newsprint, the definition of "recovered material" still would not apply to exempt the entire waste stream from regulation since only 15% of the material processed by the facility creating the pellets could be credited as "RDF."

¹⁰ Subpart Eb Siting Analysis Public Meeting and Comments, pp. 7-8.

¹¹ *Id.*

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While the acceptance by the applicant of regulation under EPA's Municipal Solid Waste Combustor standards makes it difficult to accept at face value the assertion of non-applicability of state "waste" designation, commenter concurs that the state law itself determines how this facility is to be characterized for purposes of state regulation.

Because the material is not a "refuse derived fuel" under KRS 224.01-010(23) in that it has not been subject to "extensive separation of municipal solid waste" including "the extraction of recoverable materials for recycling" the processing of the municipal solid waste stream to create the palletized "fuel" does not make the material a "recovered material" under KRS 224.01-010(20). The proposed gasification step in the process and the cleaning of the volatile fraction of the waste for combustion does not make the facility a "recovered material processing facility" so as to exempt it from the definition of a municipal solid waste disposal facility or to avoid the obligation to be consistent with the local solid waste plan.¹²

Beyond the specific failure of the application to meet the criteria for an exempt "recovered material processing facility" because the waste feed will retain recoverable materials, including all plastics and paper, the *context* in which municipal solid waste disposal facilities are regulated under KRS Chapter 224 makes clear that the attempt to shoehorn this substantial waste-fueled energy facility into the category of a "recovered materials processing facility" is an ill-fit from a public policy standpoint. KRS 224.01-010, which contains many of the definitions for the chapter, is prefaced with the caveat "[a] s used in this chapter unless the context clearly indicates otherwise [.]". The statutory provision requiring a determination of local consistency for disposal facilities was plainly intended to cover thermal treatment of municipal solid wastes with and without energy recovery, and to segment the facility into the component processes in order to exclude from the application of KRS 224.40-315 a facility which uses a sequential process of thermal treatment followed by combustion of volatile gases, and which presents many similar concerns in management of air, water and solid waste byproducts from a heterogeneous fuel source such as municipal solid waste (even if homogenous in shape), is contrary to the intent of the statute and the public policy behind it.

In sum, the Council believes that the pelletized mixed municipal solid waste does not fall within the ambit of the state statutory definition of "refuse derived fuel" and is thus not a "recovered material." By definition, the facility is a

¹² Even assuming that the partially processed waste fell within the ambit of "refuse derived fuel" and the 15% limitation on RDF didn't limit the applicability of "recovered material" even as to RDF, the proposed facility is not a "recovered material processing facility" since it proposes to combust the gases created by the thermal and pressure treatment of the waste and is not storing and processing for resale or reuse. "Reuse," as that term is used by the General Assembly does not include use of wastes as a fuel with or without heat recovery. The latter concept is "resource recovery" and is a term distinct from "reuse of solid waste." See: KRS 224.43-010 (3) (which sets reuse of solid waste as a priority below reduction, and above recycling, composting, and resource recovery through mixed waste composting or incineration).

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"municipal solid waste disposal facility" under KRS 224.40-315(1), KRS 224.40-310 and KRS 224.01-010(15).

Commenter appreciates the Division's consideration of these comments in making a final determination as to the applicability of the waste statutes to the proposed facility.

Cordially,

Tom FitzGerald
Director

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EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2000-079
INFORMATION REQUEST RESPONSE
PUBLIC SERVICE COMMISSION REQUEST
DATED JUNE 1, 2000
FILED JUNE 9, 2000